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To cite this article: Aleksandr Sklyar (2020): Value conflict among voluntary evacuee mothers from Fukushima: protecting children from radiation, respecting family and society, Japan Forum, DOI: [10.1080/09555803.2018.1552310](https://doi.org/10.1080/09555803.2018.1552310)

To link to this article: <https://doi.org/10.1080/09555803.2018.1552310>



Published online: 10 Feb 2020.



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Value conflict among voluntary evacuee mothers from Fukushima: protecting children from radiation, respecting family and society

ALEKSANDR SKLYAR

Abstract: In this ethnographic article, I present the experiences and perspectives of voluntary evacuee mothers from central Fukushima prefecture who fled with their young children to south-eastern Yamagata prefecture following the Fukushima No. 1 nuclear power plant catastrophe. I got to know these families during twenty months of fieldwork from 2014 to 2016. I argue that the value of protecting their children from radiation exposure was in tension with the valuing of school-based and family-based socialization. Valuing group-based socialization at nursery and elementary schools meant that mothers faced limitations as to what food and drink they could control when their children were at school, even in evacuation. Valuing kinship ties with husbands/fathers and extended family who remained in Fukushima meant welcoming husbands who continued to live their everyday lives in supposedly dirty Fukushima into their supposedly clean Yamagata evacuation homes. Many evacuees also regularly returned to parts of Fukushima out of family obligations. I call such return visits ‘micro returns’ in order to highlight the abnormality of having to consider the possible effects of radiation exposure in what would otherwise be run-of-the-mill, ‘normal’ culturally-sanctioned visits on holidays and weekends. Such were the material and social tensions – the pulls into and away from Fukushima, into and out of certain social and material relations – that were at the forefront of the experience of voluntary evacuation to a city just one hour’s drive away.

Keywords: Fukushima; values; nuclear disaster; voluntary evacuation; family; contamination; disaster anthropology

Prelude

Saturday, 11 October 2014.

Three days after I first arrived in Yamagata, I went with the Kimuras,¹ a relocated family of three from Fukushima city, to an autumnal potato stew event (*imonikai*) for voluntary evacuees. We drove through the autumnal fields with Mrs Kimura at the wheel, her two daughters in the back, and myself in the passenger seat. Mihoshi-chan was in second grade and her older sister, Minako-chan, in fifth grade. About half an hour into the drive, Minako-chan started asking her mother if the potato stew event location was closer or farther away from Fukushima. She wanted it to be closer, so that they could go to their Fukushima home faster after the event. They were going to visit their father for the weekend.

‘When are we going to go back to Fukushima?’ Minako-chan asked, with Disney’s *Let It Go* playing in the background.

‘After the *imonikai* event,’ her mother reluctantly told her.

Having arrived in Yamagata just three days before, I could not imagine that people, especially voluntary evacuees who had deliberately distanced themselves from Fukushima, would want to go back there. Yet, as Mrs Kimura took her daughters to this traditional regional event, where they would eat Yamagata stew free of radioactive materials and play carefree outdoors in an environment free from manmade radionuclides, it was clear that they would be heading to Fukushima after the event. Even as Mrs Kimura was uncompromising that the food she fed her children at home not be made or processed in Fukushima or indeed, in any prefecture on the Pacific Ocean side of eastern and north-eastern Japan; even as she refused to return with her daughters to live their daily lives in Fukushima again; she nevertheless continued to make these trips back and forth for her family. Powerful affective forces pulled her daughters to see their father in Fukushima. Out of caring for her daughters’ feelings and in order to fulfil her promise to her husband that he would continue to see his daughters, Mrs Kimura and the girls were pulled back to Fukushima for the weekend. In time, I learned that these brief returns to Fukushima were part of life for many voluntary evacuee families in Yamagata.

The structure and argument of this article

In this article, I present the experiences of voluntary evacuee mothers from central Fukushima to south-eastern Yamagata prefecture who had young children of elementary school age or younger at the time of the disasters.² In Part one, I provide context to enable readers to envision the world inhabited by the people whose stories I share in later parts. This includes a brief overview of the disagreements that arise over understandings of radioactive materials and

official monitoring practices. In particular, I introduce ‘decontamination’ and food monitoring as two representative official responses to contamination, each generating grey zones of contamination, while partially limiting exposure. I then give an overview of the patterns of radioactive fallout, laws, and in-family decisions that informed voluntary evacuation from central Fukushima to south-eastern Yamagata. In Part two, I elaborate on my interlocutors’ practices of radiation protection, informed by their understandings of the dust-like materiality of radioactive materials and of the power of radiation beyond the dust analogy. In Parts three and four, I analyse how voluntary evacuees have navigated social relations as they and their children continue to interact with possibly contaminated food, objects, spaces, and places. Ultimately, I argue that for these voluntary evacuee mothers, the value of protecting their children from radiation exposure was in tension with the values of upholding school-based and family-based socialization.

Research methodology

This is an ethnographic article based on twenty months of participant observation fieldwork in urban and rural areas of Yamagata and Fukushima from October 2014 through May 2016. Continual and recurring interactions with voluntary evacuees and their children, civil society supporters (*shiensha*), families continuing to live in Fukushima, and other users of non-profit-organization (NPO) spaces in Yamagata and Fukushima form the basis of this ethnography. Throughout participant observation, I took field notes and photographs; audio-recorded public events; collected flyers, pamphlets, and other ephemera; and read the most recent Japanese-language publications on the nuclear disaster.

In Yamagata, I attended over thirty small-scale events organized by evacuee supporters, such as rice planting, rice harvesting, potato stew events, winter play in the snow, cooking salons, and ‘rest and recuperation’ camps in the Yamagata countryside. I also regularly spent time at local evacuee support NPO offices and spaces, participated in a weekly evacuee mothers’ embroidery group, and volunteered at five official information sessions for voluntary evacuees held by Fukushima Prefecture and the national Reconstruction Agency. From January 2015 through November 2015, in addition to continuing participant observation in Yamagata, I regularly travelled to Fukushima, where I attended over twenty information sessions, roundtable discussions, study tours, and other events about post-nuclear disaster life. In Fukushima, I asked key interlocutors to show me around their everyday ‘decontamination in progress’ environments, attended a ‘decontamination tour’, and accompanied two visits to compulsory evacuation areas with international participants. I also visited eight families in Fukushima on several occasions and spoke with them, their local friends, and their kin about the nuclear accident. Finally, I conducted shorter multi-sited comparative trips

to far-Western Japan, Tokyo, and Hokkaido, which resulted in over fifty one-time interviews with voluntary evacuees, supporters, and local government officials. I audio-recorded in-depth interviews with twenty-five voluntary evacuees in Yamagata (twenty of whom were voluntary evacuee mothers); fifteen supporters; and twelve compulsory evacuees. In almost all cases, I audio-recorded two or more follow-up interviews with these same participants over the course of the total twenty months of fieldwork.

Part one: setting the stage

Disagreements over radiation monitoring and remediation efforts

All concerned parties in Fukushima prefecture have a good sense of where radioactive materials fell as a result of the nuclear disaster (see, for example, Extension Site of Distribution Map of Radiation Dose, etc./GSI Maps 2017; Kawatsu et al. 2017). Yet, there is no consensus as to what is safe and what is dangerous, what is acceptable and what is unacceptable, when it comes to radiation exposure. These issues pose a set of questions that were intensely contested even before the disaster at Fukushima No. 1³ – an accident that should never have happened in the first place, had the government and industry’s ‘safety myth’ (*anzen shinwa*) of nuclear power been true (Mori 2013, 593, Bricker and Inishiatibu 2014). Extant scientific uncertainty was exacerbated by the self-interested attitude that people saw in the government’s framing and handling of the accident’s consequences (Yamakawa and Yamamoto 2017a, 2017b). The release of radiation-related information by the government and industry has been neither transparent nor timely.⁴ This resulted in considerable mistrust among voluntary evacuees and the general public of the government’s pronouncements on radiation exposure, prompting the citizens of Fukushima, and Japan generally, to have to decide for themselves what information to believe and how to act (Slater, Morioka, and Danzuka 2014).

Government representations of radioactive materials depict them as spatially and materially controllable substances⁵ or as being low enough in concentration to pose no concern to any rational person. Yet, officially sanctioned practices call those reassurances into question. Two prime examples of the government deliberately and actively seeking to control radioactive materials are decontamination procedures and food monitoring measures. Each of these practices generates uncontrolled areas, objects and practices – to which I now turn.

‘Decontamination’ refers to several kinds of interventions that are meant to move radioactive materials, particularly caesium 134 and 137, from areas of habitation to slightly farther-off places, where people will know to avoid them (Nuclear Emergency Response Headquarters 2011a, 2011b). Even if people may agree that decontaminating areas is better than leaving them be,

decontamination necessarily takes time and creates highly visible by-products, described in greater detail in Part two. Furthermore, the appropriate scope of decontamination is contested, as are the measurement practices by which the efficacy of decontamination ought to be measured. Concerned citizens want to know about soil contamination levels, areas beyond the 20 m surrounding buildings targeted by decontamination procedures, and the concentrations and possible presence of radionuclides other than caesium in the environment. In envisioning and carrying out decontamination procedures, the government is explicitly concerned with air dose radiation measurements (measured in sieverts); it does not focus on soil contamination (measured in becquerels; Edgington 2017). Although the air dose levels in the disaster zone have improved since the disaster, due to decontamination procedures and the natural decay of radionuclides with shorter half-lives, this decrease in air dose levels does not mean that radioactive materials have gone away altogether, nor does the decrease in air-borne radiation necessarily indicate a similar decrease in soil contamination (Edgington 2017).

Beyond the proximate, immediate concerns for people living in and moving through environments where radioactive materials have been deposited, there were also concerns about the circulation of contaminated produce and objects through industrial systems that obscure the origin of commodities, particularly food (Sternsdorff-Cisterna 2015; Kimura 2016; Ishii 2017, 90–91). Regarding food, the government is concerned with monitoring and controlling food that goes to market, not crops or unprocessed foods themselves, food producers' levels of exposure, or 'nature's bounty' – wild vegetables picked in the non-decontaminated mountain forests (Kaneko 2017). Further examples of unaccounted-for grey zones in food include labels on fishing boats' catches, which display the port where fish is unloaded, and not the location at sea where the fish were caught; possible alterations of place-of-origin information on labels for domestic products; and gifts not purchased from monitored market sources.

To counteract the risk of possibly procuring contaminated food, concerned citizens only buy food after studying soil contamination levels, if they can; or they use a collage of relevant data and create shortcuts of meaning as to where and what is safe or dangerous (Sternsdorff-Cisterna 2015; Kimura 2016; Edgington 2017).⁶

Yamagata prefecture and Fukushima evacuees: the place and the numbers

It takes slightly over one hour to go from central Fukushima to south-eastern Yamagata prefecture by car or train (see Figure 1). The mountain ranges between the two prefectures greatly reduced the spread of the radioactive plume. This is evidenced by the results of radiation monitoring conducted by government aircraft, which show radiation levels at 1 m above the ground on

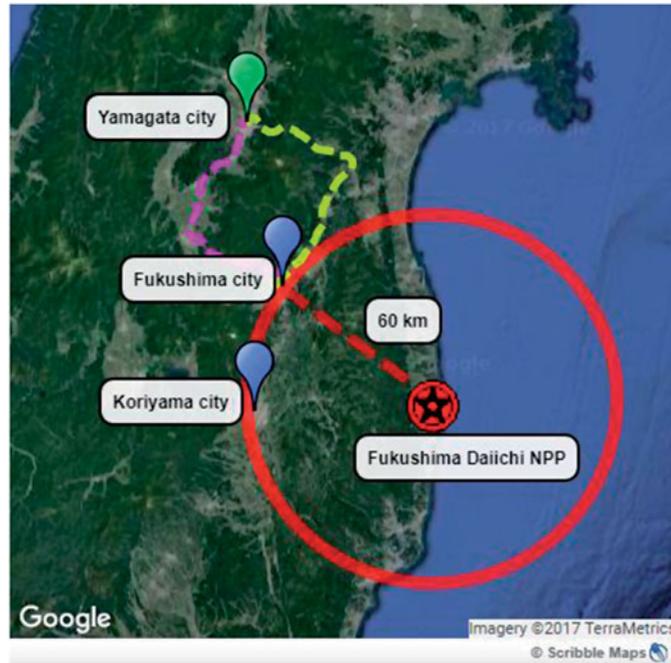


Figure 1 Map of distance from Fukushima No. 1 NPP to Fukushima city and Koriyama city and two main routes from Fukushima city to Yamagata city. Map created with ScribbleMaps and Google Maps. Available online: https://www.scribblemaps.com/maps/view/Routes_from_Fukushima_city_to_Yamagata_city/CDOlrDPEic.

15 August 2011 in all parts of Yamagata to be no more than 0.2 microSieverts per hour ($\mu\text{Sv/hr}$), with most regions below 0.1 $\mu\text{Sv/hr}$ (Ministry of Education, Culture, Sports, Science and Technology Japan 2011). This compares with 0.5~1.9 $\mu\text{Sv/hr}$ for most areas of central Fukushima prefecture (MEXT 8 September 2011). Caesium 134 and caesium 137 levels in soil show a similar pattern, with most regions of Yamagata prefecture registering less than 30,000 becquerels per square metre (Bq/m^2) of combined caesium 134 and 137 content, against 60,000~600,000 Bq/m^2 for Fukushima (Ministry of Education, Culture, Sports, Science and Technology Japan 2011). Note that these monitoring techniques do not account for localized hot spots. Nevertheless, radiation levels in Yamagata were generally far lower than those in Fukushima.

The combination of Yamagata prefecture's proximity to Fukushima, the lower radiation levels, and the availability of free apartment housing from June 2011 through to 30 March 2017 (see Lösckke, this issue), contributed to making Yamagata the destination with the most 'out of prefecture evacuees' from Fukushima for the first two years after the disaster. According to statistics gathered by Yamagata prefecture, at the peak of the exodus from Fukushima to Yamagata in January 2012, 94 per cent of all registered evacuees in Yamagata

were from Fukushima (13,033 out of 13,797; Yamagata Prefecture Government 2012).⁷ This number also amounted to over 20 per cent of all ‘out of prefecture evacuees’ from Fukushima to locations nationwide at that time (13,033 in Yamagata out of 62,808 nationwide) (Fukushima Prefecture Evacuees Support Division 2018).⁸ Unfortunately, these statistics for ‘out of prefecture evacuees’ do not differentiate between tsunami evacuees, compulsory nuclear evacuees, and voluntary nuclear evacuees. Indeed, I met several elderly families from compulsory evacuation areas in Yamagata, there because they had relatives or friends in the area. I also met Fukushima evacuees who had fled to Yamagata from tsunami-stricken areas, who are most likely included in these numbers.

The sudden swell of Fukushima evacuees to Yamagata during the summer and fall of 2011 coincided with voluntary evacuees becoming eligible for ‘temporary housing’ public apartment subsidies (*minashi kasetsu; kariage jūtaku*) under the Disaster Relief Act (*Shinsai Kyūjohō*) (Value Management Institute, Inc. 2012; Kansei Gakuin Daigaku et al. 2015; Hino 2015; Hiromoto 2016). Voluntary evacuees from Fukushima were eligible to receive free public or private housing, with local authorities paying the rent up to 60,000 yen (about \$550) per month. The vast majority of the registered evacuees to Yamagata were voluntary mother–child evacuees (*boshi hinansha*) from central Fukushima prefecture. Yamagata’s proximity allowed fathers who remained in central Fukushima to visit their evacuated wives and children at weekends. It also allowed the mothers and children to return to central Fukushima for family functions and holidays.

Most evacuated in summer or fall 2011, once they had secured an apartment that would be paid for by the government. Some packed whatever they could take with them into their cars, while others only took a basic set of clothes, for fear of carrying radioactive contamination on their futons, furniture etc. Upon arrival in Yamagata, many received the Japanese Red Cross’s six-piece set of new household appliances: washing machine, refrigerator, rice cooker, microwave oven, television and electric kettle (Japanese Red Cross Society 2011). These appliances helped them to establish daily life in Yamagata, as they enrolled their children in nursery schools, kindergartens, and elementary schools.

Six years into the nuclear disaster, 2,026 evacuees from Fukushima remained on the official evacuee lists of Yamagata prefecture: an 84 per cent drop from the initial influx of 13,033 (Yamagata Prefectural Government 2017). The vast majority of this 84 per cent went back to Fukushima. Continuing voluntary evacuation became difficult as limited economic support combined with marriages on the brink of collapse and the evacuee mothers’ getting pushed to their emotional, mental, and physical limits in trying to make evacuation work (Kansei Gakuin Daigaku et al. 2015, 135). That said, I also met evacuees who ceased to be

counted as evacuees for reasons other than returning to Fukushima: some evacuated further, feeling that Yamagata itself was too contaminated; others became Yamagata citizens, thus also ceasing to be counted as evacuees. Official statistics do not record these distinctions. The vast majority of Fukushima prefecture's two million residents, of course, never left in the first place.

The voluntary evacuees introduced here regularly took part in some form of local evacuee-specific social activities, joined evacuee support groups, or knew local civil society support workers in Yamagata. These mothers did not report discrimination towards themselves or their children. Indeed, they clearly said that such was not the case when asked. In some cases, they did experience difficulties making connections with locals, but they attributed this not to discrimination but rather to the social dynamics of living in public apartment buildings typically used for housing government employees. Some of the evacuee mothers gave up jobs in Fukushima in order to evacuate, whereas others were stay-at-home housewives prior to evacuation. In Yamagata, most sought part-time employment in non-profit organizations, care work, cleaning services or school lunch preparation, or made a minimal income from take-home sewing work. Under the pressure of waning economic and social support for their decision to voluntarily evacuate, these evacuees struggled to balance their fear of contamination and exposure against the difficulties of normalizing daily life, ensuring group-based socialization for their children, and negotiating fluctuating family support for continued evacuation.

Part two: on the ground in Fukushima and Yamagata

Visibly contaminated 'decontamination in progress' environments

During the period of my fieldwork, from 2014–2016, material manifestations of society having to deal with radioactive contaminants in non-evacuation areas abounded in Fukushima. Even though radiation is invisible to the human eye, signs saying 'decontamination in progress', and media announcements of radiation levels meant that radiation was a constantly felt reality.⁹ Decontamination work and the proliferation of 'temporary storage sites' (*kari-okiba*) for waste materials were all over Fukushima prefecture from 2014–2016. Decontamination work went on in people's gardens, on roofs, on the streets, and in schoolyards. In the immediately visible environment of people's everyday lives, large black bags full of contaminated waste were covered with green or blue tarps and placed in the corner of people's gardens and parking lots (Figure 2). 'Temporary-temporary storage sites' (*kari-kari-okiba*), popped up all over the prefecture – stacks of black bags full of contaminated waste were sometimes higher than a house (Figure 3). Decontamination materials from school grounds were collected and buried underneath those same school



Figure 2 Decontamination waste materials covered by a green tarp in a residential neighbourhood in Fukushima city. Photo by author, 17 January 2015.

grounds, while sidewalks were power-washed to dislodge and wash away the radioactive materials deposited there (Figure 4). In rural areas closer to the compulsory evacuation zones, the large black bags of contaminated waste became truly mountainous (Figure 5). These ominous black mountains, 'Decontamination in Progress' signs (Figure 6), frequent risk communication seminars, pamphlets, school hand-outs, 'glass badge' personal dosimeters hanging from schoolchildren's book bags, monitoring posts, and the physical presence of decontamination workers were all exceedingly visible signs of the continued presence of radioactive materials and radiation in people's immediate lived environments in Fukushima.

Readings from personal radiation detectors supplemented those from government monitoring posts, and sometimes called into question the officially announced radiation levels. Furthermore, weather reports broadcast on



Figure 3 ‘Temporary-temporary’ decontamination waste materials storage site in the middle of Fukushima city. Photo by author, 21 February 2015.

television and radio in Fukushima prefecture generally included current atmospheric radiation levels.

Such was the environment in which the vast majority of people in central Fukushima continued to live their everyday lives (see also the Introductions to Yamakawa and Yamamoto 2017a, 2017b). Voluntary evacuees left these contaminated environments prior to the start of decontamination procedures. Their decisions to leave and the protective measures they took were informed by a dust-like material understanding of radioactive materials, to which I now turn.

Like dust and beyond

Whereas the government sought to emphasize the safety of the levels of radiation in central Fukushima, while also embarking on a massive

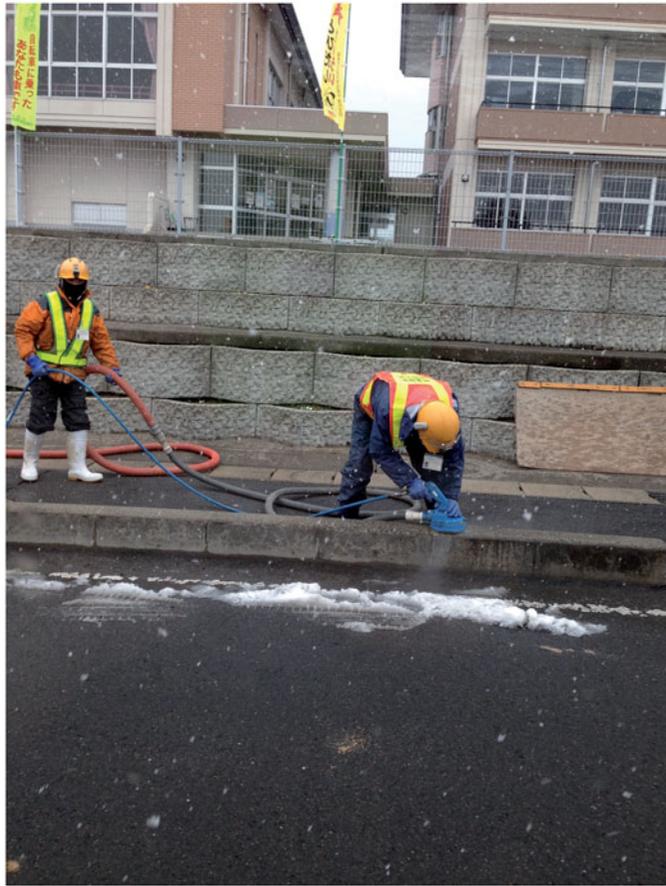


Figure 4 Decontamination procedures at a school in Fukushima City on a Saturday. Photo by author, 17 January 2015.

decontamination programme, voluntary evacuee mothers unequivocally saw the irradiated environment as dangerous. Such concerns were criticized as unscientific and as spreading ‘damage from harmful rumours’ (*fūhyō higai*). Nevertheless, thinking of radioactive materials as having dust-and-germ-like properties made radiation and exposure more explicable and manageable for evacuee mothers. Thus, my informants described a dust-like *spreadability* of radioactive materials through the environment; a dust-like *stickability* to clothing, shoes, cars, trucks, trains, skin, hair, and other objects; and a dust-like *inhalability* when particles were kicked up into the air on windy days.

Consider, for example, Mrs Sasaki of Fukushima city. After a brief two-week evacuation with her two children to north-western Yamagata prefecture in late March 2011, Mrs Sasaki returned to Fukushima for her daughter’s elementary school entrance ceremony in April 2011, when school restarted as normal. Few



Figure 5 Decontamination waste materials in Kawamata village, Fukushima. Photo by author, 21 February 2015.

changes were made to deal with the radioactive materials that had been deposited on the schoolyard grounds, and school lunches were prepared with Fukushima produce. For three months, Mrs Sasaki took her daughter to and from school in her car and prepared her children's lunches at home with ingredients grown and processed outside of Fukushima, as best she could. She watched in horror as the pupils at her daughter's elementary school were told to line up outside and sit down on the contaminated ground. The first-grade children would touch their faces with their hands, which had just been on the ground, or even put their hands in their mouths. This was a time when air dose radiation levels in Fukushima City were between 0.26 and 6.65 $\mu\text{Sv/hr}$, as compared with the current decontamination goals of 0.23 $\mu\text{Sv/hr}$ or less (Edgington 2017, 92). It was terrifying to Mrs Sasaki to see her first-grade daughter and her school friends being allowed to interact with the



Figure 6 ‘Decontamination in progress’ signs on sidewalk in Fukushima city. ‘We are sorry for the inconvenience. We are transporting removed soil, etc. Until March 30, 2015.’ Photo by author, 29 January 2015.

contaminated environment in such a way. Wanting to protect her children, Mrs Sasaki applied for an apartment in Yamagata city at the beginning of June 2011. Once summer vacation came in late July, she and her children returned to north-western Yamagata. They then moved into their Yamagata city evacuation apartment in mid-August 2011, and lived there for nearly four years, until they returned to their home in Fukushima city in late March 2015.

Here are some other examples of the dust-like shorthand that people used to express their understanding of radiation risk. Mrs Kimura, with whom I opened this paper, asked readers to imagine children playing in a sandbox on the playground. Radioactive materials cling to dust-like particles. When the wind blows sand dust into the air and sun shines through the dust, she knows there is caesium 137 mingled with it. ‘Imagine seeing children in that dust cloud’, she said to me. In reality, Mrs Kimura has never let her daughters play outside in

Fukushima since the accident. When I asked Mrs Kojimoto, a voluntary evacuee who will feature in Part four, how she explained the situation in Fukushima to her four-year-old daughter, she told me that she told her daughter that the air in Fukushima was dirty. Mrs Yamatsuki told her daughters that radiation was sticky and dirty like germs or dust – thus emphasizing the importance of washing off radioactive materials, in case they were on their hands.

These understandings of radioactive materials as being stickable, spreadable, inhalable, and absorbable, like dust, sand, germs, or other particles in the air that deposit onto and transfer between objects, allowed voluntary evacuees to put in place radiation protection measures that were very similar to dust control measures focused on shoes, clothes, and cars, in addition to physically removing themselves and their children from the environments they viewed as dangerous. For the first few years after the disaster, Mrs Kimura regularly washed her car; she also had separate shoes for use in Fukushima and Yamagata. Another voluntary evacuee, Mrs Honda, who evacuated to Yamagata for one year and eight months before returning to live in Nihonmatsu city in Fukushima prefecture, had hard plastic shoe trays instead of foot mats in her family car. That way, it would be easier to wash away any radioactive materials deposited there from her family's shoes and the radioactive materials would not get into the soft fibres of the foot mats. She also turned the car's air-conditioning onto internal ventilation mode when she was in Fukushima.

Mothers were concerned about health effects arising from internal and external exposure (such as cancer), including the possibility of delayed on-set conditions in the future. For example, when Mrs Kojimoto recounted how her in-laws fed her daughter Fukushima apples, she mentioned that damage to health from eating contaminated food would probably not surface until decades later. By then, linear causal relationships between exposure and onset of symptoms will be difficult to prove (Adam 1998).

Wherever radioactive materials go, questions surrounding exposure will arise. Mothers may remove themselves and their children from a place with radioactive materials, but concern over the risks of exposure persists:

1. Are radioactive particles stuck to your clothing?
2. Did you ingest them? If you ingested them, will they be excreted or will they be absorbed into your tissue and organs – your body; your child's body?
3. If they are absorbed, what effects will this have? On what organs? When and for how long? In what ways?

These are just some of the factors that contribute to making radiation exposure simultaneously a pressing present danger and a yet-undefined set of future health risks: a form of what Nixon (2011) calls 'slow violence'.

Part three: controlling Fukushima objects in Yamagata

Radiation protection left to individuals in society

Given the unregulated flows of most objects, people, and vehicles between Fukushima, Yamagata, and the rest of Japan, evacuees had to negotiate and decide for themselves what was polluted and what was clean on a daily basis. Such ‘self-responsibility’ (*jiko sekinin*) comes both from the government seeking to evade responsibility for contamination, on the one hand, and from people acting to protect themselves against a government and industry that they do not trust, on the other. These are both new and old forms of governmental and citizen concerns in Japan. Industrial pollution incidents and food scandals of the past influenced some citizens’ agentive self-protection in matters of industrial food, environmental safety, and health consciousness (Walker 2010; Sternsdorff-Cisterna 2015). At the same time, there are undeniable dimensions of neoliberalism in corporations’ and governments’ externalizing the responsibility for dealing with contamination onto the individuals whose life spaces have been contaminated (Nixon 2011; Love 2013; Kimura 2018). While empowered self-responsibility should theoretically allow for individuals to make their own decisions and act as they see fit, economic and social constraints make this empowered truth only attainable for a subsection of the population (Kimura 2016, 12–13, 132–133). Furthermore, even if an individual acts as an ideal neoliberal subject, free to choose how they live their lives, they nevertheless live in a world of social relations, in which one’s choice of habitation, food, and other dimensions of care and childrearing may be faulted if negative health consequences result or if the choices disrupt social order.

In the post-Fukushima context, someone, especially a mother, who showed too much concern about radiation ran the risk of being chastised by others for being overly ‘nervous’ (*shinkeishitsu*), ‘hysterical’ (*hisuterii*), unscientific, and even unpatriotic (Slater, Morioka, and Danzuka 2014, Kimura 2016). My ethnography shows how evacuees who understood these personal and social dimensions of post-contamination society went about raising their children within these socio-material contexts.

Visits from husbands

Keeping spaces, people, and objects separate between Fukushima and Yamagata was a point of difficulty and the way evacuees dealt with this changed over time. Some voluntary evacuees were very strict about staying away from Fukushima and had only gone back once or twice between 2011 and 2016. Some continued to feel that their husbands’ coming to visit from Fukushima contaminated their living spaces in Yamagata. They worried that

radioactive dust may be stuck to their husbands' clothes and shoes, and disliked their husbands' regular presence in places they considered to pose transferable material risk. Some families had clothes and shoes they wore only in Yamagata, and others they only wore in Fukushima. Wives would make their husbands bathe upon arrival and wash their Fukushima clothes in a Fukushima clothes-only laundry load. Some continued these practices five years after the disaster, but most gave up eventually, merely hoping that there weren't too many radioactive materials on their husbands' clothes and shoes.

The case of milk

Many Fukushima mothers with whom I spoke in Yamagata had figured out various strategies to have their children avoid foods they considered dangerous, including almost everything grown and processed in Fukushima, and especially mushrooms, lotus root (*renkon*), and seafood caught in the Pacific Ocean. Milk from anywhere in north-eastern Japan was avoided. Looking closely at how these mothers managed their children's milk consumption in the context of nursery school and elementary school lunches demonstrates the constrained successes they were able to achieve as they valued both radiation protection and group-based socialization.

Milk is widely touted to be a rich source of calcium that growing children should drink to develop strong, healthy bones. But milk is also known to be the medium through which many children ingested radioactive iodine following the Chernobyl disaster, which in turn resulted in a dramatic rise in childhood thyroid cancers among the affected populations in Ukraine and Belarus (World Health Organization 2006). Mistrust in the Japanese government's pronouncements of safety, delayed communications about the direction and levels of the radioactive plume in March 2011, continued reports of ongoing leaks of radioactive materials from the plants, and concerns over the possible circulation of radioactive materials into cows' feed and into the air at milk processing plants contributed to evacuees' continued resistance to letting their children consume milk from Fukushima and the rest of north-eastern Japan.

These physical/material concerns over milk turn into social concerns the moment one considers the contexts in which milk is consumed. Particularly salient for the evacuee mothers was the milk their children drank in nursery and elementary school. One of them told her son's preschool (*hoikuen*) that her son was allergic to milk, as a way to save him from having to drink it. Several months later, one of the teachers confronted her and told her that she should really let her son try milk. The teacher was concerned because the boy had caused a small hubbub that day when he tried to wrest the straw attached to another child's milk box and tried to insert the straw into that child's milk box himself. He was not trying to drink the milk – he just wanted to be the one to

poke the straw into the box. The teacher explained to the mother that it would be nutritiously important for her son to drink milk, and that if he didn't start drinking it now, he might not like it for the rest of his life. If her son was truly allergic, she would need to provide a doctor's note to that effect. The evacuee mother was forced to explain about her son's having been exposed to radiation in the first days of the accident, and that she did not want him drinking milk as it might worsen the risk of future damage to health. The teacher was very understanding and apologized for his lack of information.

Another evacuee mother noticed that the milk at the lunch served to parents and students when she was visiting her son's school was processed in Fukushima. She took it home with her in her handbag when no one was looking, telling her son that they would drink it once they were home. She then proceeded to throw it out in her own trash at home when her children were not looking. She did not refuse the milk and could not throw it out then and there at the school. But she nevertheless made sure her children did not drink it.

From the point of view of teachers, denying your child this fortifying, healthy drink is to deny your child a strong future; it is also to deny your child shared milk socialization with his or her peers at lunchtime. Some argue that any milk that comes to market should be safe enough to drink, having met government radiation standards. The mothers who ask for their children to be excused from drinking school milk also understand these perspectives and practices. Yet, when trust in the government about radiation contamination issues has been lost, these official pronouncements are ineffectual. The mothers therefore seek to alter what their children consume, while minimizing disturbance in the school community and avoiding conflict with other parents and the school. They are also keenly aware of how difficult self-exclusion from food-based group socialization can be for their children. Ms Tanaka, a single mother, and her daughter Hanako's story is a powerful example of such considerations. I met Ms Tanaka and her daughter Hanako through my relief-worker friends who hosted *gyōza* (pot stickers) parties for a group of four mothers in evacuation, with their children. I got to know all these mothers and children over many months, playing together and sharing meals. I spoke at length with Ms Tanaka in late March 2015, and again, in April 2016. The vignette below comes from our final interview, in April 2016.

There are things that Hanako has never eaten and groups of people with whom she has not been able to share food. For example, one day Hanako told her mother that everyone in her class toasted a classmate's birthday with milk, but she couldn't because her mother doesn't let her drink the school lunch milk. Ms Tanaka once again had to tell Hanako why: it is to protect her health because the milk might be dangerous. But she could see that she was forcing her daughter to refrain from doing something she wanted to do. Though perhaps Hanako did not entirely understand why she had to exclude

herself from these class rituals, she had to cope with the pain of self-exclusion at her mother's request. Ms Tanaka wonders, 'When will this child's self-restraint (*gaman*) for the sake of her mother shift into self-assertion and rebellion?'

There is a negotiation here between the physical, bodily danger that certain foods, milk in this case, may pose and the social, societal meanings of belonging created through food/milk sharing rituals. Hanako has yet to partake in these sharing rituals due to the dietary restrictions imposed by her mother. Nor does Hanako know when she will be able to enjoy these social rituals. It pains Ms Tanaka to have to make her daughter practise self-restraint in these circumstances. In not drinking milk, she is different from those around her – from the group. Ms Tanaka is not sure whether Hanako understands why she has to endure these restrictions and self-exclusion.

As we spoke, I commented that *gaman* (self-restraint) is hard. Yet Ms Tanaka does not think that *gaman* is altogether bad. Self-restraint is something that all children have to learn. They can't just have anything they want whenever they want it. Being able to restrain yourself is a crucial basic skill needed in order to function well in society. But this kind of *gaman* is different, since it differentiates Hanako from her friends and threatens to leave her in isolation, perhaps too a target for bullying.

One can say that the meaning of milk changed after the Fukushima disaster. Yet, there is more to this than just the shift in a definition. From a semi-otic materiality standpoint, any object will always have more qualities and properties than those which are selectively emphasized or deemed the most important in a given social, cultural, or linguistic context (Keane 2003; Fehérváry 2012). Healthy bodies, healthy futures, possible thyroid abnormalities, possible surgeries, possible medical futures, and how you will then judge yourself as a mother and caregiver – all are implicated in the milk. At the same time, these mothers want to be good citizens, to not cause too much trouble at the school in the community hosting them as evacuees, and to avoid tiring out their children from having constantly to worry about these things. These kinds of negotiations between actions in the present and future reverberations permeate many food, life, and parenting decisions faced by evacuees.

Part four: in the in-between. Navigating visits to family in Fukushima

Micro returns

In addition to protecting their children from radiation and normalizing daily life in evacuation, voluntary evacuee mothers also had to figure out how to

continue upholding family and economic ties with relatives and property, such as homes, that remained in ambiguously contaminated grey zones inside Fukushima. Much like the Kimuras, with whom I opened this article, most of the evacuees I got to know during fieldwork made frequent trips back and forth between Yamagata and Fukushima in part as a response to these tensions. I call such short-term return visits by evacuees to their Fukushima homes and families ‘micro returns’ in order to contrast them with (1) ‘normal’ visits to family (*kisei*) in non-radioactive contexts; and (2) the ‘final return’ (*kikan*) out of evacuation, towards which voluntary evacuees were guided by the government, bureaucracy, media, neighbours, friends, and family. Just because a voluntary evacuee made micro returns did not mean that she desired to go back permanently. Furthermore, even if a voluntary evacuee went through with the final return, this did not mean that she thought all was well in Fukushima, as Mrs Kojimoto’s example below demonstrates.

For those who went back for the Obon Buddhist Holidays in mid-August and the New Year’s holidays or on a more regular basis, some anticipated the discomfort that they would feel when their in-laws fed their children Fukushima produce. Five years after the disaster, others had become more relaxed about micro returns, feeling that basing their lives elsewhere was enough to keep them safer than if they were living in Fukushima. They nevertheless knew that they were in evacuation precisely because of the continued abnormal situation in Fukushima. These negotiations and discomforts highlight the integral presence of radioactive materials and the abnormality of having to consider the possible effects of radiation exposure in what would otherwise be ‘normal’, culturally-sanctioned visits. Although evacuees had various practices that they employed to counteract these possibilities of exposure, there were limits to what they could do if they were also to respect the feelings of those with whom they interacted when in Fukushima on a micro return.

Mrs Kimura: daily back-and-forths

Mrs Kimura chose voluntary evacuation to protect her daughters from radiation exposure by moving them to a location where they could lead an everyday life in a radiation-free environment, with minimal inhalation and ingestion of radioactive materials. At first, she considered evacuating several hundred kilometres away. However, her parents still needed her to work at their family pharmacy in Fukushima city. Thus, she and her daughters were only able to evacuate to Yamagata city – close enough to allow Mrs Kimura to make the one-hour each-way commute to Fukushima city.

From the very start, negotiations with her parents and husband strongly influenced Mrs Kimura’s style of voluntary evacuation. Concern for her daughters’ lifelong biological wellbeing prompted Mrs Kimura to take her daughters

into evacuation in summer 2011. At the same time, Mrs Kimura compromised her own evacuation to continue being – day-in, day-out – in Fukushima for the sake of the economic viability of her Fukushima-based family and out of dedication to her parents. She also took her daughters to Fukushima to see their father at weekends and holidays. However, even if she does go back almost daily, Mrs Kimura continues to see the state of affairs in Fukushima as abnormal. I therefore consider Mrs Kimura's daily commute to and from Fukushima, and certainly the times when she takes her daughters to see their father, to be micro returns.

Mrs Kojimoto: eating 'normally' in Fukushima

I met Mrs Kojimoto at a cooking salon for evacuee mothers in Yamagata in January 2015. Her husband was having a new house built, so that Mrs Kojimoto and her daughter would make the final return to Fukushima city in July 2015, thus reuniting the family. The weekend before I met her, she had been back in Fukushima city on a micro return for a Shinto ground-breaking ceremony (*jichinsai*) to bless the plot where the new house was being built.

Mrs Kojimoto evacuated to Yamagata in July 2011 with her daughter, who was only a few months old at the time. By January 2015, she had spent more time separated from her husband than living with him. Her daughter had lived almost all her life in Yamagata. Mrs Kojimoto did not want to go back permanently and was worried about things such as contaminated places her daughter might pass on her way to and from school or when not under adult supervision. She was also worried about what her daughter might do as she grew older, and the radiation in places aside from the decontaminated schools and municipal establishments. As she pointed out, by being somewhere, you are breathing the air there. The air in Fukushima is likely to have radioactive materials in it, even in small quantities. These particles will certainly increase when dust is kicked up and circulated – or if you play in fields, walk through alleyways or sit outside under trees that have not been decontaminated.

During her time in evacuation, Mrs Kojimoto made periodic micro returns. She would go back to Fukushima with her daughter to visit her in-laws and her own natal family around the mid-summer festival of Obon and the New Year holidays, among other occasions. In an interview, I asked Mrs Kojimoto to tell me how she had explained the evacuation and radiation to her daughter. She said she always stressed the need to be careful with air, saying that 'the air was dirty' in Fukushima. It was somewhat strange to me that Mrs Kojimoto would emphasize air, rather than water, soil, or food, so I pressed her on the point.

K: The air. I told her, 'the air'. With food, well, [that's taken care of because] I am careful about what I feed her. And then, when we go back [to Fukushima] and we go to my [natal] family's house, I tell my parents to be careful and to not feed her anything

from around there [Fukushima]. Besides, even if I told her [my daughter] about that [food], I don't think she would understand.

AS: And your parents are understanding?

K: I can tell them [my own parents] directly, and they just say, 'oh, if that's the case, OK then.' But when we're at my husband's parents' house, well, from the get-go, they don't think it's dangerous. And then, if I go and say something, well, I don't think it will be pleasant for anyone. So, when we go to their house I try my best to ... well, I let them feed [my daughter], but [in my heart], I think 'ugh ...' But I can't just flat-out say, 'Stop that, please!' [Mrs Kojimoto laughs], so, it's like there's nothing that can be done about it, really.

AS: That's hard ...

K: The neighbours will bring over some freshly-picked – since it's the Fukushima countryside – there are apple farmers nearby, and they take the freshly-picked apples and just peel them right then and there, without taking them to be screened [for radiation], and just serve them. Just like that.

AS: What? Really?

K: Yeah. They take the apples that they cannot sell on the market and come over with them. Then they're peeled and served right then and there. Ugh! I really hate it! But, well, I can't really let that show. And then, once I go back to live in Fukushima, I don't know what I should do ... whether I should say something or what ... ahh ... these are my worries these days.[...]

AS: Have you spoken with your husband or someone about this?

K: Ahhhh, really, there's no point in even trying to say anything to him.

AS: Oh really?

K: He'd be like, 'My parents just went through all that trouble to peel it and give it to her, and you won't let her eat it?' Yeah. It's like that. He's remained in Fukushima for a long time. And, well, while, on the one hand, you have people like me who are worried about it [food, radiation, etc.], on the other hand, you also have parents who think, 'oh [it's been long enough]; it's fine by now,' and who are letting their kids eat normally.

AS: Wow ...

K: And, um, my husband's older brother's kids are also eating normally. It seems that the parents don't worry about it anymore. And so, that's why he [my husband] says, 'well, since their kids are eating everything just fine, I'm sure it's all right, don't you think?'

AS: Is that what he says ... ?

K: Something like that. But, I mean, even if you eat it, it's not like something's going to happen to you right away. If anything happens, it'll be decades later, and that's when you'll be in trouble. So that's why I don't want to let my daughter eat it. They all say 'It's fine to eat it,' and I just go on thinking to myself, 'I don't think so ...' [Mrs Kojimoto laughs]

With prolonged fieldwork, I came to understand that in the actions (even if not in the minds and hearts) of voluntary evacuees, the social bonds surrounding food in family relationships at times outweighed the risk of contamination in food. As in Mrs Kojimoto's case, I often heard voluntary evacuee mothers speak of choosing to preserve social respectability in their relations with their husbands and in-laws, even if it meant possibly ingesting dangerous substances and allowing their children to eat Fukushima produce they would otherwise forbid.

Mrs Kojimoto was not the only one to underscore how things are done ‘normally’ in Fukushima. The term *‘futsū ni’* (‘normally’) became prevalent in the narratives of evacuees anticipating their return to Fukushima. A final return meant accepting the air, streets, and dust from which they had evacuated in the first place. It also meant accepting hefty doses of Fukushima love and normalization alongside the daily radiation levels throughout the prefecture. They would have to force themselves to behave ‘normally’, despite their numerous concerns about food supply and preparation, drinking water, children, schools, births, breathing, hanging out laundry, neighbourhood relations, etc. They anticipated a kind of necessary emotional and mental numbness to it all, once they went back to live in the ‘normal’ Fukushima every day. Stating that one has to force oneself to live and eat ‘normally’ underscores the fact that one does not, in fact, think that that way of life is normal.

Discussion and conclusions

In this article, I have shown how voluntary evacuee mothers from central Fukushima to south-eastern Yamagata sought to protect their children from radiation exposure, while facing social limits to their radiation protection efforts. Overall, voluntary evacuees’ actions were tempered by their own valuing of continued group-based socialization at school and with their families, who remained in Fukushima. This meant social and material compromises, ambivalence, and changes in attitudes over time, as material and interpersonal circumstances in Fukushima and in evacuation changed.

Socially, once children are given over to an institution of socialization such as a kindergarten or school, the mother can no longer control all her children’s practices in the institution. Morioka (2014) presents one example of how ‘activist mothers’ in southern Miyagi prefecture succeeded in acquiring radiation detectors from their local governments in order to conduct radiation monitoring at their local nursery schools and kindergartens in the months immediately following the 3/11 disasters in 2011. Morioka argues that these ‘activist mothers’ were successful in pressuring the immobilized authorities into action in large part due to their appeals from the moral, socially conservative, and state-sanctioned stance of protective motherhood (Morioka 2014, 196–199). Morioka (2014, 198) also comments that, ‘No counter-ideology challenges the legitimacy of maternal protection in contemporary Japan’.

Kimura (2016) paints a slightly different picture of the extent to which emphasizing one’s role as a mother in the wake of the nuclear disaster can affect change at the local and societal levels. Kimura focuses especially on food policing and citizen radiation monitoring organizations in predominantly urban locales in Japan between 2011 and 2014. Whereas the mothers about whom Morioka writes were heard ‘precisely because they hold the subordinate status of

housewives and mothers whose realm of influence is confined to domestic matters' (Morioka 2014, 198), the mothers with whom Kimura spoke were repeatedly bashed by society as 'radiation-brain moms', who were overly worried, confused, and unscientific (Kimura 2016, 35). Although Kimura demonstrates that 'maternal identity helped women highlight the need for a different kind of logic in thinking about contamination's impact' (Kimura 2016, 94), her analysis overwhelmingly emphasizes how, even in the wake of contamination, the virulent, inescapable strictures of postfeminism, neoliberalism, and scientism force women into docility, demobilization, and depoliticization (Kimura 2016, 19, 21). Even in Kimura's recounting of the 'school lunches movement', mothers seeking to gain legitimacy through their positionality as women and mothers were thwarted, bashed, or otherwise constrained. Kimura ends her account by suggesting that though epistemic and procedural justice in the face of invisible contamination may be arrived at through citizen science, such justice-oriented engagements would still take place within a neoliberal regime that will not listen to women's concerns unless they are expressed in a technoscientific, depoliticized, 'happy' way (Kimura 2016, 156–157). The moral stance of motherhood, therefore, does not exonerate women from the apolitical demands of neoliberalism, the postfeminist gender contract, and scientism.

The experiences I presented in this article fall between Kimura's and Morioka's findings. Although the mothers with whom I spoke did not seek to change institutional practices or become citizen scientists, they nevertheless succeeded in removing their children from perceived harm's way for several years after the nuclear disaster. In the realm of family, the proximity of Yamagata to Fukushima allowed for visits from husbands and micro returns, but evacuee mothers' control over material practices during the micro returns was often limited whenever other family members were present. Some might argue that the constraints and pressures these mothers faced in such family relations arise from the conservative values of respecting the husband and the husband's family, as embedded in the 'good wife' half of the 'good wife, wise mother' (*ryōsai kenbo*) ideology (Ueno 1987; Borovy 2005). By this interpretation, being a 'wise mother' by protecting one's child from radiation was in direct conflict with being a 'good wife' and daughter-in-law, which would require living in the same place as her husband and his family, contributing to the family's domestic economy, and socializing her child into her husband's kin network through material practices such as sharing in food. If Fukushima places and food are absolutely 'dangerous', then the irreconcilable contradictions between being a 'good wife' and 'wise mother' are obvious. That said, the glimpses of evacuees' marital relationships that I offer in this paper are insufficient to cast a 'good wife, wise mother' interpretive lens on all voluntary evacuees. Furthermore, Fukushima destigmatization and economic recovery campaigns, these evacuees' relations with their own parents, their own attachment to their hometowns, and other

societal and interpersonal pressures beyond deference for the husband and his family, also bore down on these Fukushima women.

The expectation of eventual return to their pre-evacuation homes loomed over voluntary evacuees throughout. The anticipation and eventual announcement that government support for evacuation housing was going to end on 30 March 2017, also dented their determination to stay away. In spite of these developments, some voluntary evacuees will never return for good, even if they no longer count as evacuees in the official numbers. For many others, as time wore on and prolonged evacuation created economic and personal tensions within families; as official air dose radiation measurements in Fukushima decreased (even if soil contamination measurements did not); as mothers and children tired of the constant dietary restrictions; and as the lure of everyday stability ‘if only’ they were to return to Fukushima grew, one might say that radiation was becoming a relative, rather than an absolute danger.

Yet, even if these voluntary evacuees did return to Fukushima, they did so not because they saw the radiological situation as resolved, but rather *in spite of* their ongoing worries. Going into evacuation could not alleviate concerns about initial exposure or when or how related health effects might surface. As with Chernobyl survivors and other victims of ‘slow violence’, these are questions that will dog the disaster victims for the rest of their lives, even if symptoms never surface (Adam 1998; Nixon 2011). Living and coping with that is a permanent fact of life.

Acknowledgements

I would like to thank Krisztina Fehérváry, Tom Gill, University of Michigan Ethnology Lab 2017, Chiaki Nishijima, Sonja Dale, and Robert Simpson for their tremendous help on the organization and thematic development of this paper. Thank you also to the two anonymous reviewers for their constructive and inspiring feedback on the original submission.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes

1. All names are pseudonyms.
2. The types and times of evacuation from outside of the official government-designated evacuation zones (*kuikigai jishu hinan*) varied (Kansei Gakuin Daigaku et al. 2015).
3. Although a fuller discussion of low-dose ionizing radiation exposure debates is beyond the scope of this paper, I encourage readers to look at Hecht (2012), Boudia (2007, 2008), Kuchinskaya

- (2014), Lindee (1994), and Petryna (2013) for thorough engagement of these topics in varying global contexts, in addition to Kimura (2016) for the post-Fukushima Japan context.
4. For literal non-transparency, see incidents of requests for information disclosure met with blacked-out records in Hino (2013, 2015).
 5. This is the overall tone of Ministry of the Environment publications, available at the Fukushima Decontamination Plaza (*Fukushima Josen Puraza*), a government information centre near JR Fukushima station, recently renamed the Environmental Renewal Plaza (*Kankyō Saisei Puraza*), dropping the uncomfortable word ‘decontamination’ and the marked place reference, ‘Fukushima’.
 6. For discussion of trust in food beyond the north-east region, see Reiher (2017). Sternsdorff-Cisterna (2015) and Kimura (2016) write mainly about consumers in the greater Tokyo area.
 7. All statistics are for evacuees registered with Yamagata prefecture. Not all evacuees would have officially registered. Yamagata Prefectural Government reports are available for download at: <http://www.pref.yamagata.jp/ou/kankyenergy/020072/fukkou/hinansha-suu/23hinansya-suu.html> (Accessed 23 May 2018).
 8. These numbers are based on data from the Reconstruction Agency, which relies on prefectures’ self-reporting of evacuee numbers based on self-decided collection methods and varying definitions of who counts as an evacuee. A change in who counts as an evacuee can suddenly increase the number of evacuees in a given prefecture by several thousand, as was the case in Saitama from July to August 2014 (Hino in Kansei Gakuin Daigaku et al. 2015, 32–33).
 9. There are other kinds of invisibility associated with radiation exposure, which are often pointed out by scholars working on radiation contamination and nuclear labour issues. These include the nuclear industry’s active production of statistical invisibility of workers’ exposures (see Hecht 2012, 2014) and the redrawing of maps and other representational forms to downplay the expanse and intensity of contaminated areas (see Kuchinskaya 2014 for the post-Chernobyl Belarusian context).

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